



LEPISMATIDAE OF THE UNITED STATES—SLABAUGH.

A New Thysanuran, and a Key to the Domestic Species of Lepismatidae (Thysanura) found in the United States.

By RUTH E. SLABAUGH, Dept. of Entomology, University of Illinois, Urbana, Illinois.

(Plate III.)

While trapping for *Thermobia domestica* (Pack.), the fire-brat, in one of the buildings of the University of Illinois, in January, 1939, an unknown species of the genus *Ctenolepisma* Escherich was caught. More specimens were captured at intervals throughout the year.

***Ctenolepisma urbana* n. sp.**

♀. (Fig. 1).—Length: body, 15 mm.; antennae, 17 mm.; cercus, 10 mm.; median filament, 12 mm.; ovipositor as seen from below averaging 3.5 mm. Width, 3.5 mm. Body elongate, slender; thorax slightly wider than abdomen, which tapers weakly posteriorly. Body color white; dorsal surface with slate grey scales, when freshly molted much darker; ventral surface with white scales; setal tufts of head yellowish-golden; legs white, with golden hairs; cephalic aspect of distal end of femur with grey and white scales; cerci and median filament reddish with light segments at intervals.

Setal tufts of head prominent, with many radiating setae. Distal segment of labial palpus slightly shorter than the penultimate one, and weakly hatchet-shaped, with five large sensory papillae (Fig. 3); number of setae on inner edge of lacinia varying from 8-10; maxillary palpus 5-segmented (Fig. 11). Thorax strongly arched, more than half length of abdomen. Posterior edge of metasternal plate narrow, rounded (Fig. 12). Tergite X (Fig. 2) trapezoidal, with tip narrowed, very slightly emarginated, length less than combined lengths of tergites VIII and IX. Outer dorsal setal combs (Fig. 1, A) on abdominal tergites II to VI; thus, abdominal tergites II to VI with 3+3 setal combs (i.e., three on each side); tergites VII and VIII with 2+2; IX with none; and X with I+I. Two pairs of styli, second pair longer than first; ovipositor long and slender, extending beyond processes of sternite IX (Fig. 6).

♂.—Like the female, except for differences in genitalia (Fig. 5).

This species differs from *Ctenolepisma quadriseriata* (Pack.) (Fig. 13), the only other species of this genus recorded from

the United States, by the number of styli, shape of tergite X, by having six outer dorsal setal combs instead of five, and by scale coloring; it agrees with it in the comparative length of ovipositor and antennae. It is very similar to *Ctenolepisma longicaudata* Esch., a species of economic importance in Africa and Australia, but differs in the following respects. The species, *longicaudata*, has from 9-12 sensory papillae on the labial palpus (Fig. 4, E) while the five papillae in *urbana* (Fig. 3, E) were found constant in every stage of development examined, including first instar nymphs. The setae in the medial setal tufts of the head in *urbana* are much more numerous and more haphazard in position (Fig. 8; 10, G); in *longicaudata*, they are arranged in rather definite and widely spaced rows (Fig. 9). The slight indentation in the tip of tergite X is more consistent than in *longicaudata*, specimens of which were examined that had no emargination.

Holotype female. Urbana, ILLINOIS, June, 1939, in a basement room. *Allotype* and *paratypes* from same locality. *Holotype, allotype, paratypes* (2 ♂, 2 ♀), deposited in collection of the Illinois State Natural History Survey, Urbana, Illinois. Also, *paratypes*, 2 ♂, 2 ♀, in the United States National Museum, no. 53977; *paratypes*, 1 ♂, 1 ♀, in Museum of Comparative Zoology, Harvard University.

Remarks. 40-50 specimens were trapped in glass jars with flour bait, in two connecting rooms in a University building. One of these rooms, an infrequently used storeroom containing old museum exhibits from all over the world, suggests a possible introduction of this species from some other country.

Appreciation is expressed to Miss Eder Lindsay, University of California, Berkeley, California, for supplying specimens of *C. longicaudata* for comparison.

BIOLOGICAL NOTES.

The adults of this species, compared to the quick moving *T. domestica*, are much more quiet and move about slowly and ponderously, while the nymphs are more active. It has been found that they thrive in a high percent of relative humidity and a temperature of from 80-90° F. Whole wheat flour is readily accepted as food.

Eggs were laid by captured individuals in May and October and very young nymphs were trapped during these months. The eggs, creamy white in color, oval in shape, averaging 1.0 mm. in length and 0.77 in width, hatch in from 20-25 days. The young nymphs split the shell by means of a spine egg-burster situated on the head between the bases of the antennae. First instar nymphs are opaque white in color, without scales, with the antennae and caudal appendages short and stout, and the tarsus with a single segment. In the second instar, the body has a shiny, transparent appearance, the appendages have increased in length, and the tarsus has two segments. The head and posterior margins of the thoracic and abdominal segments have a rough, wide network of reddish-brown color. This coloring persists until scales appear in the fifth instar, but grows fainter in the third and fourth instars. The styli on the ninth sternite first appear in the fifth instar, and in one individual observed, the second pair appeared in the ninth instar. The total number of molts has not been observed.

KEY TO DOMESTIC SPECIES OF LEPISMATIDAE
IN THE UNITED STATES.

The following key is included to aid in the identification of those species of Lepismatidae that are found in houses in the United States. *Thermobia domestica* and *Lepisma saccharina* are the two very common species of economic importance.

1. Abdominal sternites with medial setal combs (Fig. 7, *F*); abdominal tergites without outer dorsal setal combs (i. e., 2 rows of setal combs on each side, or setae not in brushes or combs) (Figs. 14, 15).....2
1. Abdominal sternites without medial setal combs; abdominal tergites with outer dorsal setal combs (i. e., 3 rows of setal combs on each side) (Figs. 1, *A*; 13).....3
2. Maxillary palpus six-segmented; cephalic and abdominal setae in tufts or combs, not single; tergite X trapezoidal, posterior margin not indented; ovipositor extending considerably beyond tergite X; three pairs of styli in female (Fig. 14), two in male; color of scales brown and tan.
Thermobia domestica (Pack.)
2. Maxillary palpus five-segmented; cephalic and dorsal abdominal setae occurring singly or in small groups, never

in tufts or combs; tergite X long, rounded on posterior margin; ovipositor not visible beyond tergite X; two pairs of styli in both sexes; color of scales silver grey (Fig. 15).

Lepisma saccharina Linne.

3. Two pairs of styli (Fig. 1, *D*); outer dorsal setal combs on abdominal tergites II-VI (Fig. 1, *A*); tergite X trapezoidal (Fig. 2), with the posterior margin weakly emarginated; color of scales slate grey.

-*Ctenolepisma urbana* n. sp.

3. Three pairs of styli; outer dorsal setal combs on abdominal tergites II-VII (Fig. 13); tergite X short, with the posterior margin not indented; color of scales violet brown, with four longitudinal stripes on abdomen.

Ctenolepisma quadriscriata (Pack.)

Note.—It is often advisable to clear and stain specimens so that the structures can be more easily seen.

EXPLANATION OF PLATE III. (See opposite p. 91)

Figs. 1-3. *Ctenolepisma urbana* n. sp.; 1, Entire insect, dorsal view, *A*, outer dorsal setal combs, *B*, lateral setal combs, *C*, inner dorsal setal combs, *D*, styli; 2, Tergite X; 3, Labial palpus, *E*, sensory papillae, which distinguish this species from *C. longicaudata*.

Fig. 4. *Ctenolepisma longicaudata*, labial palpus, *E*, sensory papillae.

Figs. 5, 6. *C. urbana*; 5, Sternites 8 and 9 and terminalia, male; 6, the same, female.

Fig. 7. *Lepisma saccharina*, ventral view of abdomen, *F*, medial setal combs.

Fig. 8. *C. urbana*, medial cephalic setal area showing arrangement of setae.

Fig. 9. *C. longicaudata*, medial cephalic setal area showing arrangement of setae.

Figs. 10-12. *C. urbana*; 10, dorsal view of head, *G*, medial setal areas; 11, maxillary palpus; 12, metasternal plate.

Fig. 13. *Ctenolepisma quadriscriata*, dorsal view.

Fig. 14. *Thermobia domestica*, dorsal view.

Fig. 15. *Lepisma saccharina*, dorsal view.